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ABSTRACT

"Exploring Careers" is a career education resource program, published in fifteen separate booklets, for junior high school-age students. It provides information about the world of work and offers its readers a way of learning about themselves and relating that information to career choices. The publications aim to build career awareness by means of occupational narratives, evaluative questions, activities, and career games grouped in fourteen occupational clusters. This eighth of the series, "Transportation Occupations," presents an overview of jobs in the transportation industry, such as flight engineers, merchant mariners, and dispatchers. Narrative accounts focus on an air traffic controller, railroad passenger conductor, and a busdriver, explaining what they do and how they prepared for their jobs. Exploring sections relate skills needed for these occupations to students' personal characteristics, and learning activities such as joining the Civil Air Patrol and reporting on weather conditions' influence on flying are suggested. A Job Facts section lists nature and places of work, training and qualifications, and other information for twenty transportation occupations grouped in occupational clusters of air transportation, railroad, merchant marine, and driving occupations. ("Exploring Careers" is also available as a single volume of fifteen chapters.) (KC)

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# Exploring Careers

# Transportation Occupations

U.S. Department of Labor
Ray Marshall, Secretary

Bureau of Labor Statistics
Janet L. Norwood, Commissioner
1979

Bulletin 2001-8

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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*Exploring Careers* is available either as a single volume of 15 chapters or as separate chapters, as follows:

The World of Work and You
Industrial Production Occupations
Office Occupations
Service Occupations
Education Occupations
Sales Occupations
Construction Occupations
Transportation Occupations
Scientific and Technical Occupations
Mechanics and Repairers
Health Occupations
Social Scientists
Social Service Occupations
Performing Arts, Design, and Communications Occupations
Agriculture, Forestry, and Fishery Occupations

# Photograph Credits

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# Preface

*Exploring Careers* is a career education resource for youngsters of junior high school age. It provides the kind of information about the world of work that young people need to prepare for a well-informed career choice. At the same time, it offers readers a way of learning more about themselves. The publication aims to build career awareness by means of occupational narratives, evaluative questions, activities, and career games presented in 14 occupational clusters. *Exploring Careers* emphasizes what people do on the job and how they feel about it and stresses the importance of "knowing yourself" when considering a career. It is designed for use in middle school/junior high classrooms, career resource centers, and youth programs run by community, religious, and business organizations.

This is 1 of 15 chapters. A list of all the chapter titles appears inside the front cover.

*Exploring Careers* was prepared in the Bureau's Division of Occupational Outlook under the supervision of Russell B. Flanders and Neal H. Rosenthal. Max L. Carey provided general direction. Anne Kahl supervised the planning and preparation of the publication. Members of the Division's staff who contributed sections were Lisa S. Dillich, David B. Herst, H. Philip Howard, Chester Curtis Levine, Thomas Nardone, Debra E. Rothstein, and Kathy Wilson. Gloria D. Blue, Brenda Marshall, and Beverly A. Williams assisted.

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Although they are based on interviews with actual workers, the occupational narratives are largely fictitious.

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This flight engineer is checking out her jet before takeoff.

Earnings of airline pilots are among the highest in the Nation.

## Coming from the West

The Midwestern plane began a smooth descent as it neared Lambert Field, the St. Louis international airport. Walter Faraday, the pilot on Flight 682, was carrying a full plane of 300 people from Denver. He was surrounded by an assortment of electronic and mechanical buttons and gauges, all of which required special attention. The cockpit was equipped with communications equipment that allowed contact with air traffic controllers along the way. Other instruments showed the plane's speed and position, the amount of fuel, and the condition of the engine. Working alongside him in the cockpit were the co-pilot and the flight engineer, who helped maneuver the plane for a safe flight.

"I was afraid those strong headwinds we ran into over Topeka would really put us behind schedule," he said to Raul Morales, his co-pilot. "But going up to 25,000 feet helped us pick up the speed we needed. We're only 15 minutes behind schedule." As he spoke, his left hand pulled the throttle, slowly decreasing the speed of the plane.

"Yes, looks like we did a fine job," Raul replied. He was busy checking other instruments.

"This is Midwestern 682 to St. Louis tower," Walter said into the microphone. "Request final approach instructions."

Well-designed cabs reduce the strain of truckdriving.

## Coming from the East

Not quite 200 miles ea , of the St. Louis airport, on Highway 40, a large grey truck was cruising at a comfortable speed. Seated behind the wheel, Louise Windsor rubbed her tired eyes and glanced down at her watch. "Making pretty good time," she thought. "We should be in St. Louis by dinnertime."

Louise and Frank (her husband and driving partner) had been on the road for 3 full days, with only a few hours' sleep along the way. Arriving in St. Louis meant the end of the line, where they would drop off the load of furniture they were carrying and spend a comfortable night before heading back home to North Carolina.

Her eyes were fixed on the crowded interstate as mile after mile passed. Located high in the cab of the 18-wheeler, it was easy for Louise to watch the road and plan her route to minimize delays. After all, the longer it took to deliver each load, the more time and money it cost.

Louise chatted on the CB radio to find out about weather and road conditions up ahead and to pass the time. Occasionally, she looked down at the instrument panel in front of her to check her speed, fuel, oil pressure, and the temperature of the engine. "We'd better stop for fuel," she said.

"Let's stop at the next exit," Frank replied. "I could use a cup of coffee anyway."

Louise eased onto the exit ramp, downshifting the truck through many gears. She braked to a stop next to the diesel fuel pump and said to the attendant, "Fill it up, please."

## Coming from the South

Some 300 miles south of St. Louis, a broad-beamed tugboat was pushing a string of barges carrying fuel oil from the Gulf Coast.

"Head about 10 degrees northeast," Bud Hennison directed his second mate, Rick Proctor. "The radar equipment picks up a barge 8 miles to the north," he added.

The two merchant marine officers stood at the controls of the tugboat *Olympia.* They had been on the river for days and were now on the last leg of their voyage up the Mississippi River to St. Louis. As chief mate and head officer of the deck crew, Bud's job was to navigate the ship. This meant plotting and maintaining the vessel's course. At the moment, they were in a heavy fog that made it impossible to see other river traffic.

"Give a short blast on the whistle," Bud ordered.

As the *Olympia's* whistle sounded through the fog, Bud took the clipboard from its place next to the radar and sonar equipment and began writing. Being responsible for the safe, smooth operation of the ship involved recording or "logging in" all the events of the voyage. Just then there was a distant whistle from the starboard side.

"Looks like they received our signal," said Bud. "Keep an eye out for them. I'm going down to the deck."

You have just spent a few moments with an airplane pilot, a long-distance truckdriver, and the chief mate on a cargo carrier. Let's see if these people have anything in common other than being bound for St. Louis.

All of them work in the transportation industry. Transportation is the business of moving people and goods from one place to another. It includes travel by air, rail, water, on roads and highways, even underground. Someday it may include travel in space.

This man is training to become a riverboat pilot.

The Nation's 200,000 miles of railroad track are an important means of moving people, food and industrial goods.

We all depend on the transportation industry. For example, you may take a bus to get to school each morning. Your parents may travel to work by car, bus, train, or subway. Even if you walk or ride your bicycle most of the places you need to go, the transportation industry serves you in other ways.

It is the means through which energy, raw materials, and finished products are channeled where they are needed. Railroads and trucks carry the food, lumber, automobiles, furniture, clothing, and thousands of other goods that fill our stores. Ships and airplanes carry goods between cities in America and throughout the world. The food we eat may come from farms hundreds or even thousands of miles away. All this is possible because railroad trains, trucks, and planes are constantly on the move. The transportation industry links Americans with each other and with the rest of the world.

## Transportation Occupations

The people we usually think of as "transportation workers" are those who operate the vehicles—pilots and busdrivers, for example. However, people with many different skills are needed to keep America on the move. Mechanics and technicians keep the vehicles and equipment in top working condition. Railroad yard clerks and taxicab dispatchers are transportation workers who perform clerical and administrative tasks. Still other transportation workers deal with the public. They may seek new customers, make reservations, help children or handicapped travelers, or take care of complaints.

We can begin to explore transportation careers by looking at each of four groups of transportation occupations: Air transportation, merchant marine, railroad, and driving.

# Transportation Occupations

***Air transportation occupations.*** The *pilot* and *flight attendant* may be the first people who come to mind when you think about flying, but many other workers are needed to ensure a safe flight. Helping the captain, or pilot, guide the plane is the *co-pilot*. The co-pilot is the second in command on any flight. Also aboard is the *flight engineer*, who monitors the engine, fuel, and all other systems. Just as important are those who provide airplane services on the ground. These include the *air traffic controllers* who monitor the path of the airplane from start to finish. Generally, the pilot does not make any move without first "okaying" it with the controllers. *Aircraft mechanics* keep airplanes running safely and well. Besides repair work they do maintenance regularly. Many different people are employed to book customers and coordinate flights. *Reservation, ticket, and passenger agents* give customers flight information, sell tickets, assign seats, and check baggage. The personal contact with the public in this job is very important. It can make all the difference between a satisfied customer and a dissatisfied one. *Ramp agents* help guide airplanes into the gates using hand signals to pilots. They also load and unload baggage, freight, or mail. Other jobs in aviation include *flight instructors* who teach people to fly and *crop dusters* who fly over fields and spray them to aid growth of crops.

Flight attendants have to serve people graciously, but quickly.

Commercial aviation offers jobs on the ground and in the air.

*Merchant marine occupations.* The maritime industry offers travel and adventure and many different kinds of work. Work aboard ship is divided among the deck, engine, and steward's departments; sailors in each of these departments do different things. The *captain* or *master* commands the ship and has complete authority over everyone and everything aboard.

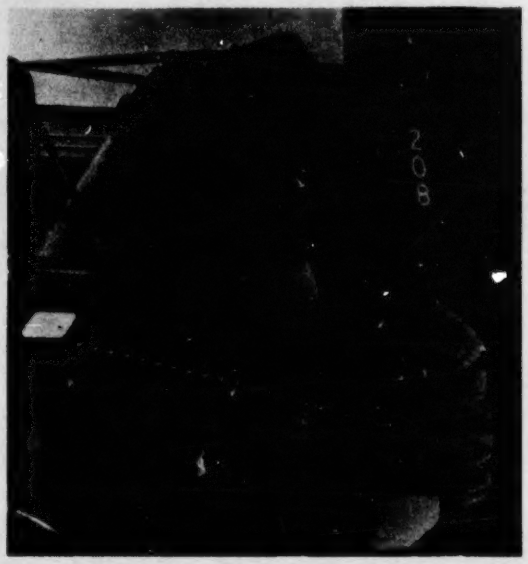
The deck department is responsible for regulating the course, position, and speed of the ship; maintaining and repairing the hull and deck equipment; and loading, unloading, and storing cargo. New sailors in the deck department start out as *ordinary seamen*. They do general maintenance, such as scrubbing the decks and painting. *Able seamen*, those who steer the ship and do skilled repair work on deck, are the next rank. The *boatswain*, or bosun, is the top ranking able seaman. The deck officers, or "mates," include the *chief mate*, who is the captain's top assistant in assigning duties to the deck crew, and the *second and third mates*.

The engine department crew works below deck and runs all the engines and machinery. It includes workers at all skill levels. *Wipers* are beginning level sailors who keep machinery clean. Other sailors include *oilers*, who lubricate and maintain equipment, and *fire-watertenders*, who check gauges on the ship's boilers. Other engine crew members include the *electrician* and the *refrigeration engineer*. The *chief engineer* is in charge of the engine department, and has the help of the *first, second, and third assistant engineers*.

The steward's department feeds the crew and maintains the living and recreation areas. Sailors in this department begin as *utility hands*, doing kitchen work such as scouring pots and preparing vegetables, and *mess attendants*, serving meals and taking care of the ship's living quarters. The *chief cook* plans and prepares the meals. The top sailor in this department is the *chief steward*, who is responsible for the meals and upkeep of living quarters. This is the only department head who is not an officer.

Experience in the Coast Guard or Navy may help get a merchant marine job.

*Railroad occupations.* The Nation's 200,000 miles of railroad track are an important means of moving people, food, and goods among our cities and towns. Over half a million people are employed to operate trains and keep them in top working condition. *Conductors* are in charge of running the train. Their primary concerns are safety and running on time. On passenger trains, conductors collect tickets and fares as well. Conductors are always in communication with *locomotive engineers*, who work all the controls—such as acceleration and brakes—on the train. *Brake operators* work on trains and in railroad yards, making sure that trains are coupled (or linked) and uncoupled properly. They also inspect airhoses and handbrakes on all cars and assist the conductor when necessary. Other members of the train crew are *hostlers*, who help prepare the locomotives for their run, and *switchtenders*, who throw track switches in railroad yards. But many others are responsible for seeing that trains run efficiently. Shopworkers are the skilled employees who build, maintain, and repair railroad cars and other equipment. Some of these workers are *machinists, electrical workers, car repairers, sheet-metal workers, boilermakers*, and *blacksmiths*. To direct train movement and assure train safety, *railroad signal workers* install, maintain, and repair the communications and signaling systems. *Track workers* inspect and regularly maintain railroad tracks. They also put down new track when it is needed. *Dispatchers* work in stations along the railroad lines, sending messages to train crews by way of *telegraphers, telephoners*, and *tower operators*. These messages contain such things as track conditions and routing instructions. *Station agents* are the railroads' contact with the public. They offer information and try to get new business for the company.



Applicants for truckdriving jobs must have good driving records.

*Driving occupations.* Truck, bus, and taxi drivers move passengers and goods over the Nation's highways and through the streets every day. More people than you might think are *local truckdrivers.* These are the people who drive moving trucks, newspaper trucks, mail trucks, freight delivery trucks, and other kinds of trucks in and around the city. Those who carry goods thousands of miles across the country in large trucks such as "18-wheelers" are known as *long-distance truckdrivers.* There are other kinds of drivers, too. *Taxicab drivers* operate without fixed routes or schedules and offer individualized service to passengers. *Local transit busdrivers* drive city and suburban routes to transport millions of Americans daily. They also collect fares and answer questions. *Intercity busdrivers* follow a route between communities, which may be on city roads or on highways or both. In small towns, these buses may be the only public transportation to other towns. Then there are support workers such as *traffic agents,* who try to get new business for companies, and *dispatchers,* who supply the drivers with scheduling and route information.

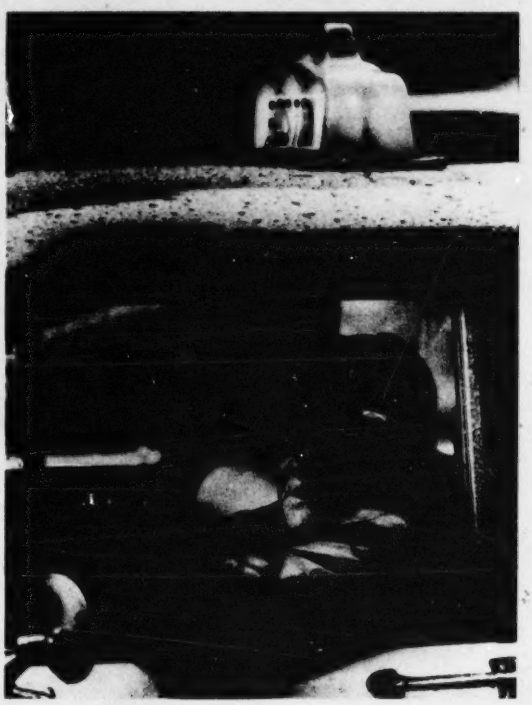
## Personal Characteristics

Although it takes people with many different skills to keep our planes, ships, railroads, trucks, and buses on the move, transportation workers have certain traits in common.

Because of the millions of travelers who depend on them, transportation workers must be *conscientious* in their work and *pay close attention to detail.* The shopworkers who build and repair railroad cars, for example, must do their work carefully so that cars don't break down while they're in use. Air traffic controllers have to pay strict attention to guide planes safely on their proper course. Long-distance truckdrivers must stay wide awake and concentrate on driving for hours at a time. Sailors, drivers, pilots, and railroad engineers all need to be alert while they're on the job.

For many transportation workers, the ability to keep calm and *work under pressure* is important. Meeting schedules—delivering goods or people on time—is very important in the transportation industry. Yet storms, accidents, traffic tie-ups, and other unexpected situations crop up from time to time. Transportation workers have to be able to think quickly and act decisively in order to get things back on schedule as soon as possible.

An *easygoing personality* is an asset for transportation workers who are in direct contact with the public. Local transit bus and taxicab drivers, for example, must have the patience to deal effectively with passengers—the rude ones as well as the pleasant ones—and the steady nerves to drive in all traffic situations. Workers who sell tickets,



Taxicab drivers have to work in all kinds of weather.

answer questions, listen to complaints, or try to get new business need to be good at dealing with all kinds of people.

Some transportation workers need the *ability to work as part of a team.* In the merchant marine, for example, cooperation and interaction among the deck, engine, and steward's departments are essential for the "smooth sailing" of the ship. Not only do members of the ship's crew work as a team, but they eat, sleep, and socialize together too.

Others in transportation need to *be able to work independently.* Long-distance truckdrivers may spend days alone on the road. They must organize their time and set a steady speed in order to deliver goods on schedule.

The things that transportation workers do are not necessarily strenuous, but they require *good health and physical stamina.* Baggage attendants, for example, carry and load passengers' luggage on trains, buses, and airplanes. Parking attendants and flight attendants are on their feet and serving customers most of the time. Some jobs may not require much physical activity but demand excellent health just the same. Air traffic controllers, local and long-distance bus and truck drivers, and locomotive engineers are some examples. These jobs all require workers who are levelheaded and have steady nerves. In many cases workers must pass strict physical exams to enter these occupations.

A job in this field is likely to mean *working nights or weekends or on rotating shifts,* because transportation is not just a 9-to-5 operation. Many trucks, buses, planes, ships, and trains run 24 hours a day, 7 days a week.

## Training

Through your hobbies or school activities you may already have begun acquiring skills that will lead to a career in transportation. Do you enjoy building and fixing things in your spare time? Mechanical aptitude and analytical ability are important in such occupations as airplane mechanic, able seaman, and locomotive engineer. Perhaps you are a ham radio operator. This hobby can provide a solid foundation for the training you'd need to become an air traffic controller or a railroad tower operator. You may have had the opportunity to sell tickets, collect money, schedule events, or give information to others. Can you think of transportation occupations that require these skills?

Formal training for transportation occupations varies a great deal. Detailed information on training requirements can be found in the Job Facts at the end of this chapter.

In some transportation occupations, the necessary skills are learned right on the job. In railroading and the merchant marine, for example, beginners start out as helpers and work their way up, a process that typically takes many years.

In railroading, workers typically learn their skills on the job.

Some transportation workers get their training in trade schools or technical institutes. Many airplane mechanics, for example, attend trade schools that provide practical job experience as well as classroom instruction. Long-distance truckdrivers also may train in this way.

If you're interested in a career in aviation, plan on attending college. A college degree—or at least several years of college training—is preferred for most aviation occupations, including pilot, air traffic controller, flight attendant, and reservation, ticket, or passenger agent.

In some transportation occupations, workers must have a license that demonstrates their expertise in the field. This is the case for airplane pilots, who must have a flying license certified by the Federal Aviation Administration, and for truckdrivers, busdrivers, and taxicab drivers, all of whom must have a State chauffeur's license.

Regardless of which transportation occupation you're interested in, you'll find a high school diploma an asset. Even in jobs that don't require it, advancement to more responsible positions often goes to those who have a diploma. High school courses in math and English are helpful for many of the transportation occupations. Other courses, such as machine shop, driver education, and public speaking, may be helpful for certain occupations.

## Air Traffic Controller

As a ground controller, Mia Hensen is responsible for directing runway traffic.

"Washington Tower, this is Global Airlines Flight 702. Request permission for takeoff."

Mia Hensen carefully checked the radar screen in front of her. It was filled with lines that represented airspaces, and moving blips, or symbols, that indicated planes. To the untrained eye, this large glowing screen would seem impossible to interpret. But to Mia, a veteran air traffic controller, checking traffic patterns and positions of airplanes from the radar screen was a routine part of every takeoff and landing.

After closely reviewing the radar screen, Mia turned her head slightly to the right where the flight strips were posted. These long strips of paper contained information about each flight that was due for takeoff, such as its destination and scheduled time of takeoff. They helped Mia get the waiting planes off the ground in the safest, most efficient manner.

"Cleared for takeoff, Global 702 ... Wind is from the southeast at 14 miles per hour," Mia radioed the pilot. At the same time, her fingers were punching out this information on the keyboard in front of her. It would then be relayed to the computer that kept track of all inbound and outbound flights.

Although she made it seem effortless, working her shift as ground controller—directing traffic down the runway and out of Washington National Airport—was a demanding job. Besides checking the pattern from the radar screen and the flight strips, there were dozens of other details running through Mia's mind. Every controller had to know the geography of the area as well as the weather conditions and visibility. Other facts, such as the size, weight, speed, and route of each airplane had to be considered in order to direct the outbound traffic safely and smoothly.

From the glass-enclosed airport tower, Mia watched Flight 702 gain speed down the runway. As the plane gracefully lifted into the air, she phoned downstairs to inform the department controllers. These air traffic controllers were responsible for watching aircraft and guiding them by radar for as much as 30 miles from Washington National Airport.

Mia was interrupted by the voice over the radio. "This is Pacifica Flight 445 ready for takeoff."

"Proceed down the ramp to runway 9, Pacifica 445," Mia radioed to the pilot a few seconds later. She then announced the wind and weather conditions.

The silence on the radio lasted no longer than 20 seconds. "This is Southern Airlines Flight 32 scheduled to leave for Miami at 4:57 p.m. We've had some problems in refueling and won't be finished for at least half an hour. I'm requesting a delay of 30 to 40 minutes."

"Roger, Southern 32 ... this is ground control. I'll reschedule your departure for approximately 5:40 p.m. Keep me posted if there are any further delays." As Mia spoke, her fingers raced over the keyboard in order to communicate this information to the computer.

Mia had just finished answering some questions about the expected weather conditions for this evening when a soft tap on the shoulder startled her. It was Manny McGinnis, who was waiting to relieve her.

"I like knowing that people trust me to make the right decisions."

"I didn't mean to scare you, Mia," Manny apologized, "but I couldn't get your attention. It's time to stand up and stretch for a few minutes."

The level of Mia's concentration was intense at this time of day, when traffic was at a peak.

"I didn't even hear you come in, Manny," Mia responded. She had been at her post as ground controller for about 2 hours now, but the time had passed very quickly.

Mia stood up and Manny slipped into her chair. She briefed Manny on the traffic situation, and then headed downstairs to relax.

Mia entered the employees' lounge, picked up a doughnut and a cup of coffee from a tray in the far corner of the room, and joined some others at one of the tables. She made an effort to relax her neck and shoulder muscles.

"Hi, Mia, how's it going?" Norman Walton greeted her. Norman was also an air traffic controller, and her tennis partner as well.

"Have you met George Foster? He's just completed training at the Federal Aviation Administration Academy in Oklahoma."

"Pleasure to meet you, George," Mia said as they shook hands. "Welcome aboard."

"Thanks a lot," replied George.

Norman smiled and said, "I was just trying to reassure George. I was telling him that directing air traffic at a metropolitan airport is not as scary as it seems at first."

"I must admit I am a bit nervous," acknowledged George. "I've had some experience in the military as a pilot and navigator, and then the training in Oklahoma. But to think that over 500 planes fly in and out of Washington National daily . . . !"

"Don't let it bother you, George," Mia responded. "It's not as though you have to direct all those planes yourself! Besides, your military training is excellent background. And the on-the-job training you'll get here at Washington National is outstanding. Especially those "practice problems" that are programmed into the computer."

Norman added, "All you need to build up your confidence is a little time and experience. We all felt the way you do when we started out."

"I'm sure you're right," George replied. He glanced down at his watch. "I hate to run, but I'm due in the tower in 5 minutes. Thanks for the pep talk."

As he walked away, Mia recalled *her* first days on the job. She had not had military training, and some people had questioned her ability to handle the job without it. Mia had been sure that she could. That had been 7 years ago in Miami. Since then, she had worked in three different airports.

Mia and Norman chatted for a few minutes more.

"Some people questioned my ability at first, but I was confident that I could do the job."

These short breaks helped to relieve the tension and refresh the controllers for their next 2-hour shifts.

Mia finished the last of her coffee and then headed down the hall. She walked through a set of double doors and entered the approach control room from which incoming aircraft were being directed. A number of voices could be heard throughout the large room.

After a short briefing on the current traffic situation, Mia took her place behind a large radarscope keeping track of planes approaching from the East. Working as an approach controller now, Mia's duties included assigning planes to the proper courses and sending messages to the ground controllers (who directed planes from the runway to the gates) upon their arrival.

"This is Atlantic Airlines Flight 572 to Washington National," a voice said over the radio. "Request final approach instructions."

Mia turned to the circular radar screen and found the symbol that represented Atlantic Airlines 572 from among the flashes of light.

"Washington National approach to Atlantic 572," Mia said into the microphone. "Your position is 30 miles northwest of the airport. Expect approach to runway 9. Wind is from the east at 10 miles per hour."

"Roger, approach control," acknowledged the pilot.

Mia then gave the pilot direction and altitude instructions to bring the airplane close to the airport. When the flight was about 6 miles away, Mia said, "Atlantic 572 ... cleared for approach. Call Washington tower now."

Assured that the plane was safely on the approach, she took a deep breath and then relayed the information to the computer and phoned ahead to ground control. Having finished that, Mia could now answer a call from a Central plane that was waiting. "Go ahead, Central 324."

"This is Central 324," the pilot responded. "I'm in a holding pattern at 8,000 feet. I've been informed that runway 6 has been closed temporarily and would like further instructions for landing."

Mia followed the regular procedures and directed the pilot down runway 9.

She leaned back in her chair for a moment to relieve the tension from her lower back. However, what appeared to be an unmarked symbol flashed on the radar screen. This brought Mia back to the edge of her seat to take a closer look. She watched the symbol fade to the right and disappear off the edge of the screen. Immediately Mia phoned Teressa Williams, the approach controller directing incoming traffic from the south. Teressa had just picked up the flash on her screen.

"I'll try to establish contact with the aircraft and then get back to you," she told Mia.

A few minutes later, Teressa phoned and explained that the "mysterious flash" they had both seen was a small private plane that hadn't bothered to radio in.

"I directed it in safely, though. I also made it clear to the pilot that he should have called and told us where he was!"

"I just don't understand why some pilots don't use their common sense," observed Mia.

The pace of the traffic slowed as the evening rush ended. Mia continued giving directions and answering questions, always alert for the unexpected. Before she knew it, Bert Johnson came by to relieve her.

"Is it that time already?" Mia asked. She looked down at her watch, which read 7:30. Just then her stomach let out a growl. Mia smiled at Bert and said, "Well it looks like my stomach knows what time it is! I guess I'll get some dinner now."

## Exploring

**Air traffic controllers must have confidence in their judgment as well as the ability to make decisions quickly.**

- Can you make decisions on your own? Are you willing to take the responsibility for your decisions?
- Do you trust your own judgment?
- Do friends often confide in you?

**Air traffic controllers must be able to see objects on a two-dimensional screen and visualize them in the air.**

- Can you read and understand graphs, diagrams, and charts?
- Can you look at a drawing and picture the three-dimensional object in your mind?
- Do you ever put together models?
- Are you good at solving geometry problems?

**Air traffic controllers are subject to stress and tension when they're on the job. They must be able to keep calm and be able to concentrate under pressure.**

- Are you able to organize your thoughts during tests even though you may be nervous beforehand?
- Do you usually perform well at crucial moments—for example, the big play in a ball game?
- Are you good at giving reports in front of the class?

**Air traffic controllers must have a good memory for detail. They must remember wind and weather conditions, geography, and the size and speed of planes when giving directions.**

- Do you remember people's names easily?

- Can you relate an exact conversation the next day?
- Can you remember what you ate for lunch yesterday?

**Air traffic controllers often have to work early in the morning or late at night. To keep up with these demands, they must be in good physical condition and have stamina.**

- Do you enjoy jogging, bicycling, hiking, backpacking, climbing, basketball, and other active sports?
- Do you enjoy dancing? Gardening?
- Do you like being active most of the time?

### Suggested Activities

Join the Civil Air Patrol. This organization, supported by the Air Force, exists in every State. Membership is open to those who are at least 13 years old. The Civil Air Patrol offers its members the opportunity to fly and to learn about the aerospace industry. Some of the subjects studied are navigation, aerodynamics, and electronics. For more information, call the "Civil Air Patrol" listed in your phone book.

Join a Transportation or Aerospace Explorer Post if there is one in your area. Exploring is open to young men and women aged 14 through 20. To find out about Explorer posts in your area, call "Boy Scouts of America" listed in your phone book, and ask for the "Exploring Division."

If you are a Boy Scout, try for merit badges in Aviation, Communications, and Weather.

If you are a Girl Scout, see if your local troop has the From Dreams to Reality program of career exploration. Troops also offer opportunities to try out careers through internships and service aide and community action projects, and proficiency badges in a number of areas including Aviation and Weather.

Ask your teacher to talk to the manager of your local airport and arrange for a class tour of the airport.

Prepare a report for a science class on the differences between an airport traffic controller (who guides planes in and out of the airport) and an en route controller (who keeps track of planes between airports).

What sort of followup occurs after a plane crashes? Use this topic for a report in a science or social studies class. You might begin your research in the library. You also can write for information to government agencies such as the Civil Aeronautics Board and the Federal Aviation Administration. Officials of your local airport may be willing to talk to you or come and talk to your class about how they investigate plane crashes.

Try to increase your ability to observe and remember details. Some things you can do include recalling people's names and phone numbers and playing cards.

Prepare a report for your science class on the kinds of weather conditions that permit or cancel a flight. Bring in and explain a flight weather chart.

Spend time on hobbies in which you learn about aviation. Some activities include building model airplanes, reading about aviation, and taking flying lessons. Learn the characteristics of different planes.

Prepare a report on the history of air travel for a social studies class.

Become familiar with electronic communications equipment. Become a ham radio operator. Learn how radar works.

### Related Occupations

The air traffic controller is one of a team of workers in the sky and on the ground who follow each plane from takeoff to landing. They ensure a safe, smooth flight. Below are 13 of these occupations. See how many of them you can unscramble.

1. PLAENARI CHINMAEC
2. PLAENARI NTAIEMNNCEA REVC
3. GGABGEA NAERLDH
4. POICTLC
5. DIPATSCHRE
6. CEETCILSRON TCHCINIANE
7. NE TOURE TFFAICR CLLERONRTO
8. GHLIFT TTEANADNT
9. GHLIFT GIEENREN
10. SSEGNERPA GEANT
11. TOIPL
12. SERVEARITON NGAET
13. CKTEIT NGAET

*See answers at end of chapter.*

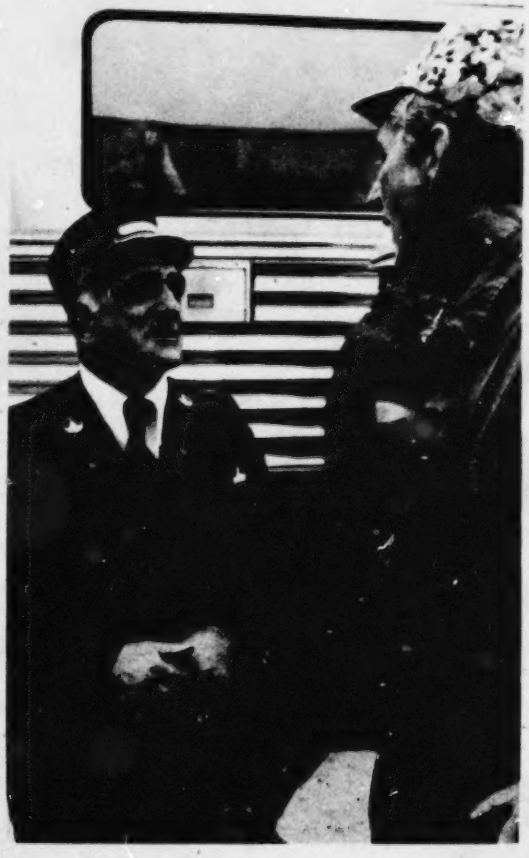
## Railroad Passenger Conductor

Together, Charlie and Max have more than 60 years of railroad experience.

It was a crisp spring morning, not yet dawn. Charlie Campbell, in his freshly pressed white shirt and dark tie, was on Track B giving the final inspection to train 171, scheduled to leave for Washington in 10 minutes. As conductor of the Baltimore-Washington commuter run, Charlie was responsible for the train. He liked to check the railroad cars to make sure they were in top running condition before the train left the station. To do this, Charlie reported for work promptly at 5:30 a.m. every morning, a full 30 minutes before the train made its first run.

Charlie had a routine he followed daily to prepare the train and its crew for departure. After signing in, Charlie reported to the dispatcher to pick up his copy of the train's orders. Then he headed out to the tracks to check the condition of the train and greet his crew.

"Morning, Jim ... morning, Max. How's everything look?"



Charlie confers with Jim Beall, the locomotive engineer.

"Should be about set," replied Max Spiegel, the brake operator. "She's all fueled and the cars are coupled. Right now I'm going to check the tail markers."

"Good work, Max."

Charlie then turned to Jim Beall, the locomotive engineer, who was up in the cab eyeing the brakes and other controls. "Have you had a chance to look over the orders?"

"Yes, Charlie," Jim responded. "Doesn't look like we should have any delays. Track and weather conditions both are excellent."

"Good," said Charlie. "We should be ready to roll in about 15 minutes." Charlie and Jim synchronized their watches at exactly 5:48 a.m.

Passengers were boarding the train now. Charlie climbed aboard so that he could doublecheck the lights and other equipment. Everything looked fine.

"All aboard!" called Charlie as the last few passengers hurried down the platform.

With everyone safely seated, Charlie pulled the last door shut. Then he gave the engineer the go-ahead.

"Move her out," Charlie said to Jim over a two-way hand radio. They would communicate by radio frequently during the run.

"Have your tickets ready, please," Charlie announced as he began down the aisle of the first car to collect tickets and fares. Most of the faces were familiar ones, as many of the passengers were daily commuters who had been riding the 171 as long as Charlie had been its conductor.

"Excuse me," said a middle-aged man as Charlie made his way down the aisle. "Will the train be on its normal schedule next week on Memorial Day? Or do you have a holiday schedule? I'm new in town and don't know the train schedules around here."

"Well, sir, we do have a holiday schedule and that's what we'll be using on Memorial Day," replied Charlie. "By the way, you can pick up the schedule for all our Baltimore-Washington commuter runs at the station. Just ask any of the ticket agents."

"Thanks a lot, I'll do that."

"Not at all," Charlie said with a slight smile. He got a feeling of satisfaction from helping passengers.

The train rode along smoothly, making stops at Elkridge, Columbia, and St. Dennis. At each stop, Charlie collected tickets and fares, working his way from the first car back to the third.

"Sir ...," Charlie heard a woman calling loudly from the rear of the car. He moved quickly down the aisle.

"Can I help you, ma'am?"

"You certainly can! Would you tell this gentleman to put out that smelly cigar? I've tried to ask politely, but as you can see he has ignored me."

"I'm afraid you're going to have to put your cigar out, sir. If you want to smoke, the next car is the smoking section on this train," Charlie said politely but firmly.

With a sour look on his face, the man said, "Okay, okay, I'll put it out. But if you ask me, her manners are worse than my cigar is!"

Charlie felt that it would be best to separate the two passengers before one or both of them completely lost their temper. "There are a few empty seats up front, sir. You'd probably be more comfortable if you moved to one of those. Then, if you want, you can move to the smoking car at the next stop."

"That suits me just fine," he replied as he picked up his briefcase and headed up the aisle.

"Now that that's cleared up, I hope you can relax and enjoy the rest of the trip, ma'am," Charlie said as he breathed a slight sigh of relief. He then walked up to the man and thanked him for being cooperative.

He had never taken a course in psychology or supervision, but Charlie knew he was good at working with people. He had the tact and judgment to deal with people successfully—the train crew as well as the passengers.

The train chugged on ... Odenton, New Carollton, and Cheverly. Almost every seat was taken now.

The next stop, the last one, was College Park. It was usually one of the more crowded stops along the route to Washington. As the train came to a halt, Charlie opened the door of the first car and lowered the steps. He stepped onto the platform and announced, "Have your tickets ready, please," so he could board the passengers and check their tickets in the most efficient way. Most of the passengers were regular riders. They greeted Charlie, showed him their weekly or monthly passes, and stepped onto the train.

At exactly 6:48 a.m., the 171 pulled into Washington's Union Station. Charlie and Max helped the passengers down the steps and onto the platform.

The train empty now, they both climbed back onto the first car and each sank into a seat. "I'd say we had about 200 paying customers on that run," Charlie offered.

Max calculated out loud and nodded his head. "Let's see ... all the seats filled, that is 65 times 3 cars or 195 ... and about half a dozen standing. Yes, that seems about right to me."

Next, Charlie counted the number of tickets sold and then added up the money collected. He made notations in his notebook which would help in writing his report tonight after the last run.

With a few minutes left before the return journey to Baltimore, Charlie and Max relaxed and began to chat.

"You know, I thought working the commuter line was

Charlie knows many of the commuters by name.

going to be a breeze after 27 years on freight trains," Max said. "It isn't as physically demanding as work on a freight train, I'll say that. But the business of collecting fares, answering questions, and keeping the passengers happy certainly keeps me on the go."

Charlie nodded in agreement. "And keeping the passengers happy is no easy job!" he said. "Two of my passengers got into an argument this morning because one was smoking and it bothered the other one."

After a comfortable silence, Charlie began to reminisce. "You know, I started working for the railroads 36 years ago. I began right after high school as a substitute brake operator in a switching yard. It was tough work, blistering hot summers and winters so cold they'd numb your fingers and toes. After a year and a half, I became a regular, and 4 years after that I got promoted to a passenger brake operator. Like you, I expected the work on a passenger line to be easier."

"Tell me more," Max said.

"Well, after 22 years as a brake operator, 10 years as a freight train conductor, and over 4 years as a passenger conductor, I guess I've learned that things don't get easy. After all those years, I still get to work at 5:30 each morning, make three morning and three evening runs, have a daily layover in Washington, and don't get home until 8:00 each night!

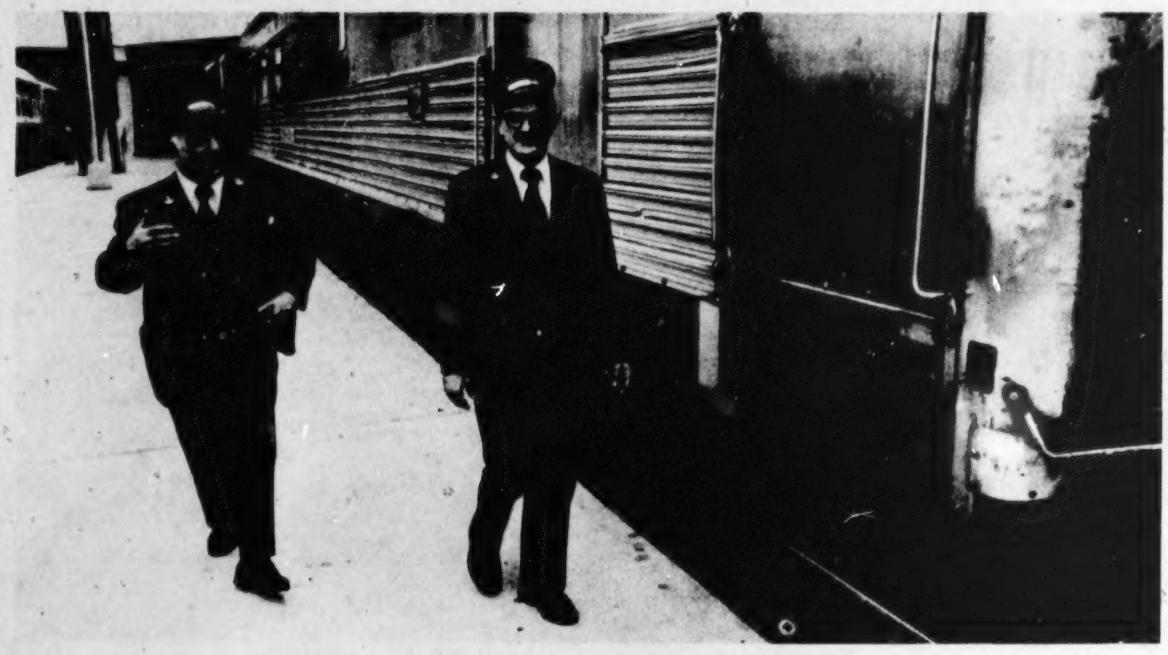
"I must admit, though, that I wouldn't trade this job for anything else in the world. There are so many rewards. I like working with people as well as machinery. I enjoy the responsibility and freedom I get on the job. There's no close supervision. And there's the 5- or 6-hour layover each day in Washington, when I can catch up on my sleep, read a good book, take in a movie, or anything else I want to do." Charlie paused for a moment. "Yes," he said, "Working on the railroad is more than just a job to me, it's a way of life!"

Glancing down at his watch, Charlie noticed it was nearly 8 o'clock. "I could probably go on talking for hours, but we'd better prepare for the next run."

## Exploring

**Conductors are in charge of running the train. They are responsible for the care and comfort of the passengers, for directing the other members of the train crew, and for making sure the train runs safely and on time.**

- Have you ever been responsible for the care of others—babysitting, for example?
- Have you ever organized a school club or been an officer of the student government?



"Working on the railroad is more than just a job to me, it's a way of life," says Charlie.

- Have you ever taken care of pets or plants for your neighbors while they were out of town?

**Conductors must be tactful and courteous when dealing with passengers. This can include anything from giving out information to dealing with a passenger who doesn't have enough money for the fare. The conductor is the railroad's representative to the public.**

- Have you ever been the spokesperson for your class or school club?
- Are you good at settling arguments among your friends?
- Can you remain calm and courteous, even when people irritate you or something troubles you?

**Conductors must have an eye for detail. They must make sure all cars are clean and have been properly coupled. At the end of each run they must report such things as the number of passengers, track conditions, and departure and arrival times.**

- Do you enjoy working with numbers?
- Do you like to play games where you must find hidden objects or words?
- Do you like to put together puzzles?
- Can you read maps easily? Can you find a place on a map quickly?

**Conductors must be flexible about their work schedules. The job may call for time away from home.**

- Have you ever spent a few weeks away from your family—at camp or visiting relatives, for example?
- Do you like to stay overnight with friends?
- Can you find plenty of things to do with free time?

**Conductors must understand how the train operates. This takes mechanical ability.**

- Do you have any hobbies in which you build or repair things? Have you ever done woodworking, sculpting, carpentry, or put together models?
- Have you ever tried to fix your bicycle or replace a fuse or a light switch?

## Suggested Activities

Take a train ride if there is a railroad line in your town. If the train is not very crowded, talk to the conductor about the work.

Find out the difference between a passenger train conductor and a freight train conductor.

To get experience in handling money and selling tickets, volunteer to sell tickets at a school play or dance.

Role-play a passenger conductor on a commuter run. Include some common situations, such as a passenger who needs scheduling information and a passenger who doesn't have enough money for the fare.

Join a Transportation Explorer Post if there is one in your area. Exploring is open to young men and women aged 14 through 20. To find out about Explorer posts in your area, call "Boy Scouts of America" listed in your phone book, and ask for the "Exploring Division."

Write for information on careers in railroading to the Association of American Railroads, American Railroads Building, 1920 L Street, N.W., Washington, D.C. 20036.

# Transportation Occupations

## Related Occupations

**Besides the conductor, many others work to ensure that the train runs safely and smoothly. Hidden in the puzzle below are 15 of these occupations. See how many you can find. The words may be forwards or backwards, either horizontal or vertical.**

BLACKSMITHS

BOILERMAKERS

BRAKE OPERATOR

CAR REPAIRERS

DISPATCHER

ELECTRICAL WORKERS

ENGINEER

MACHINISTS

SHEET METAL WORKERS

SIGNAL INSTALLERS

SIGNAL MAINTAINERS

STATION AGENTS

TELEGRAPHERS

TOWER WORKERS

TRACK WORKERS

| E | L | E | C | T | R | I | C | A | L | W | O | R | K | E | R | S | T | E | L | W | E | G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | B | R | S | R | E | K | A | M | R | E | L | I | O | B | A | L | T | I | M | O | Q | B |
| E | I | O | H | T | I | B | R | A | K | E | O | P | E | R | A | T | O | R | R | R | D | L |
| B | W | T | S | E | N | S | R | V | E | S | T | S | I | N | I | H | C | A | M | K | I | A |
| R | E | E | N | I | G | N | E | H | O | L | L | Y | W | L | S | A | C | K | E | E | S | C |
| T | E | L | E | G | R | A | P | H | E | R | S | G | A | S | M | I | S | H | I | B | P | K |
| S | T | A | T | I | O | N | A | G | E | N | T | S | B | A | S | M | I | T | Y | L | A | S |
| E | Z | G | S | R | E | N | I | A | T | N | I | A | M | L | A | N | G | I | S | A | T | M |
| A | N | W | T | O | W | E | R | W | O | R | K | E | R | S | O | T | G | N | W | C | C | I |
| R | Q | G | S | T | A | I | E | N | B | M | A | C | H | P | N | S | V | U | Q | O | H | T |
| B | E | T | I | L | A | T | R | A | C | K | W | O | R | K | E | R | S | Y | M | R | E | H |
| E | R | X | K | R | O | W | S | I | G | N | A | L | I | N | S | T | A | L | L | E | R | S |
| Z | S | H | E | E | T | M | E | T | A | L | W | O | R | K | E | R | S | U | O | Y | P | X |

*See answers at end of chapter.*

## Bus Driver

In 4 years of driving a bus, Betsy Hanratty has learned how important it is to be calm in dealing with customers.

A pleasant smile appeared on Betsy Hanratty's face as she greeted Dan Martin. Dan was a regular customer on the X-2 bus that ran from Hillside into the city every morning.

"Looks like it's going to clear up this morning ... should be a beautiful weekend," Dan remarked as he dropped two quarters into the coin machine. He took a few steps down the aisle and chose the first empty seat.

Behind Dan, another half dozen passengers followed, most of them also on their way to work. One by one, they deposited their coins and moved back.

Once all the riders were safely on the bus, Betsy grabbed the handle that was connected to the door and pulled it towards her to close the door. Out of habit, she glanced up at the rearview mirror that gave her a full view of the interior of the bus. Next, Betsy checked the sideview mirrors on both sides of the bus and turned her head to take a quick look at the traffic. This allowed a complete view that Betsy felt was necessary before she pulled away from the curb and joined the flow of traffic.

Light chatter could be heard throughout the bus, which was about one-third full now. Many of the passengers, however, settled back and read the morning newspaper or a book.

Betsy continued on her way, stopping every block or two to pick up passengers. The morning rush hour traffic was heavy, as usual, but moved at a steady pace. The early morning fog had lifted, and the sun was beginning to break through the clouds. Betsy reached to the panel on her right and picked up her sunglasses, which had been resting between the buttons marked "Defroster" and "Hi-Beam Lights".

A young woman with two children stepped onto the bus. "Does this bus go to Greenwich?" she asked in a shy voice.

"No, ma'am," Betsy responded. "The X-2 only goes as far as Cedar Crossroads. You can take this bus if you want, but you'll have to transfer at Cedar Crossroads to get to Greenwich. Or, if you want to wait, the X-18 will be by in about 20 minutes. That one goes all the way to Greenwich."

"Are you sure this doesn't go to Greenwich? My sister

"When I first started driving, I figured that being in traffic all day would take the most patience. But hectic traffic is nothing compared to some of the people I meet."

told me to catch the bus at 7:15 at the corner of 35th and Wilson Boulevard. She said that one would take me to Greenwich."

"I'm sorry, ma'am, but I'm only going as far as Cedar Crossroads. You can ride this bus if you'd like; the transfers will cost 10 cents extra apiece."

"But I know my sister can't be wrong. She rides the bus all the time."

"Well, ma'am, you must decide what you want to do now. By the way, next time why don't you telephone for bus information? That way you will be sure to get the correct bus routes and time schedules."

The young woman, still looking bewildered, opened her purse and took out some coins. "How much is children's fare?"

"Thirty-five cents, plus ten cents extra if you want to buy a transfer. That comes to a total of $1.50 for all three of you."

As the coins fell to the bottom of the coin box Betsy tore three transfers from a booklet attached to the box. The women moved to the back of the bus and Betsy breathed a slight sigh of relief. After 4 years of driving a city bus, Betsy had learned to be calm and courteous in dealing with customers. She also had learned to answer all questions and complaints politely, but firmly. "It's funny," she thought, "when I first started driving, I figured that being in traffic all day would take the most patience. But hectic traffic is nothing compared to some of the people I meet!"

In the next few stops, all the seats filled up. The pace of the traffic slowed as the X-2 approached the city. The road became more crowded, and Betsy instinctively became more cautious about her driving. Too many times, Betsy had seen drivers make a last-minute decision to turn—not paying any attention to the fact that they were in the wrong lane or that the traffic light was red. Betsy felt that a good driver must be a defensive one. She took pride in her own fine driving record.

The bell rang frequently between stops, signalling to Betsy that a passenger wanted to get off at the next stop. Occasionally, she glanced at her watch to make sure she stayed on schedule. Along with safety, Betsy considered being on time a very important part of the job.

Up ahead, Betsy saw that a delivery truck was stopped in the right lane with its lights flashing. This meant that the driver was delivering goods nearby and would return shortly. Being able to see "trouble spots" in plenty of time was one of the advantages Betsy enjoyed because, in driving the bus, she sat quite a bit higher off the ground than most of the other drivers in the traffic. Whenever she could, Betsy would plan ahead to minimize her delays.

"Good morning, Mrs. Goddfrey," Betsy greeted the elderly woman who was boarding the bus. Mrs. Goddfrey was one of the few patrons who rode the morning bus regularly on its return from the city out to Hillside. Three times a week, she volunteered at the YWCA.

"Hello, Betsy. Fine morning, isn't it?" the woman replied as she reached into her purse for the bus fare. "Oh, dear, I have forgotten my change purse. What shall I do?"

"Don't worry," Betsy replied kindly. She took some change from her pocket, deposited it in the coin box, and said, "You can bring me the money on Friday."

"You're a real lifesaver! You can trust me not to forget it on Friday." Mrs. Goddfrey made her way to the first empty seat.

The return run from the city to Hillside went quickly, as Betsy passed many of the bus stops along the route without having to stop and pick up passengers.

"Excuse me, ma'am, but does this bus go by St. John's Hospital? It's on the corner of Fourth and Pine Streets," asked a well-dressed man as he stepped onto the bus.

"Yes, it does, sir. If you'd like, I'll call out that stop as we get to it," Betsy replied.

"That would be very helpful, thank you," he said as he dropped some coins in the box. "By the way, what's a pretty little girl like you doing in a job like this?"

"What do you mean? I can handle this bus as well as anyone," she replied good-naturedly.

"In fact," she thought to herself, "I can handle it better than most. After all, when I applied for the job of a busdriver, I had over a year's experience driving a delivery truck for a dry cleaner's. And in the training program the bus company gives, I had the best grades in my class—both on the written exam and in driving skills! Not bad at all."

Meanwhile the man bound for St. John's had found a seat at the back of the bus.

The rest of the trip was smooth, with no major problems or traffic delays. In fact, at one point Betsy had to make an effort to pace her driving so as not to get ahead of her schedule. She didn't want to pass any of the bus stops early and take the chance of leaving a passenger behind.

After this run was finished, Betsy drove about a mile to the garage, where she checked in with the dispatcher. This included reporting the runs she made that morning, counting the fares collected, turning in her booklet of transfer slips, recording the number of transfers given out, and reporting special problems or delays. Since Betsy worked a split shift—from 5:30 to 9:30 a.m. and later from 4:00 to 8:00 p.m.—she did not have to write up her reports until later that evening.

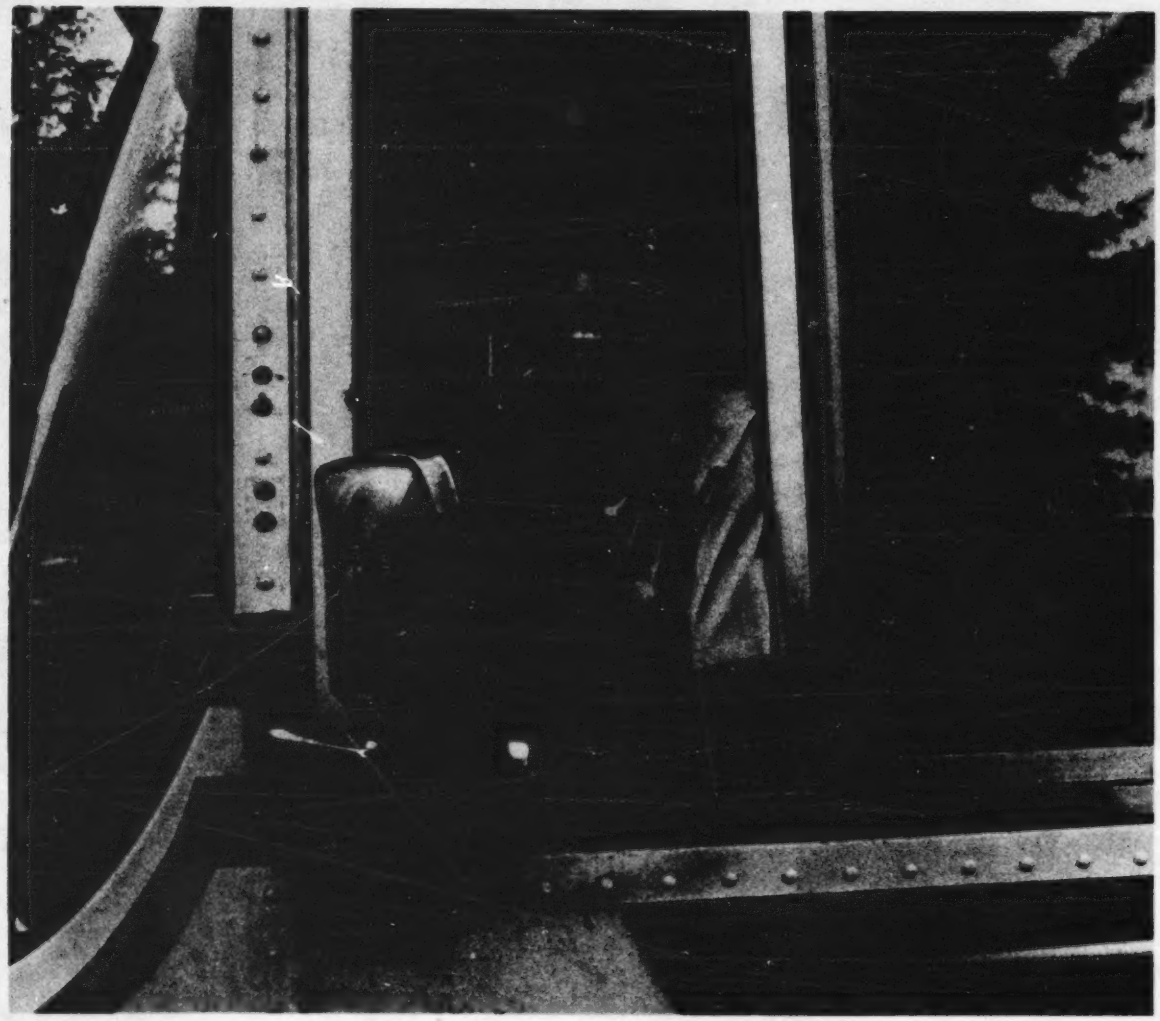
## Exploring

**Busdrivers must be easygoing and even-tempered to be able to deal with all kinds of passengers, weather conditions, and traffic problems.**

- Can you control your emotions when everything seems to go wrong?
- Can you keep your temper when an umpire calls you out and you thought you were safe?
- Can you remain calm and courteous, even when people irritate you or something troubles you?
- Can you make your case calmly when a teacher gives you a grade that you think is unfair?

**Busdrivers must be safety conscious and follow traffic regulations in delivering passengers safely to their destinations.**

- Do you look both ways before you cross the street?
- Do you obey traffic regulations, such as riding your bicycle with the traffic and only crossing at a crosswalk?



Betsy feels that a good driver must be a defensive one. She takes pride in her good driving record.

- Have you ever been responsible for the care of anyone else--babysitting, for example?

**Busdrivers are generally free from close supervision while at work. They must be able to drive their routes, stay on schedule, and handle any emergencies on their own.**

- Do you do your homework without being told to?
- Do you clean your room or help with chores around the house without being told to?
- Are you generally on time for class or for meetings?
- Do you budget your time?
- Would you know what to do in case of a fire or other emergency at home?

**Busdrivers must have good driving ability to maneuver the bus in heavy traffic. This includes good eye-foot-hand coordination, quick reflexes, and good depth perception.**

- Can you ice skate, ride a skateboard, or ride a bicycle?
- Are you a good bowler?
- Can you pitch, hit, and catch a softball?

## Suggested Activities

Compare a bus ride through town during rush hour to a ride in the middle of the day. Notice the differences in the amount of traffic, the cost of the trip, the number of passengers, and how long it takes to get from one place to another. What other differences do you observe?

Learn to recognize the symbols on road signs and how to follow them.

Many people rely on buses to get around town. Buses offer many advantages, including relatively low cost, convenience, and the peace of mind of not having to drive yourself. Other ways to travel around town include cars, bicycles, and taxicabs. Make a list of the advantages and disadvantages of each.

Find out what types of bus services are available in your community. You can start by looking in the yellow pages of the telephone book.

Invite a representative from a bus company in your area to speak to your class about training requirements and job opportunities for busdrivers in your community. Prepare questions in advance.

Learn how to change a flat tire and handle other common repairs on your family car.

Learn how to read maps of your city and its surrounding areas. In this way, you can become familiar with the main streets and famous landmarks.

To become familiar with handling a motor vehicle, learn how to drive a sit-down power lawnmower, a minibike, or a boat if any of these are available.

Join an Auto Mechanics, Road Rally, or Transportation Explorer Post if there is one in your area. Exploring is open to young men and women aged 14 through 20. To find out about Explorer posts in your area, call "Boy Scouts of America" listed in your phone book, and ask for the "Exploring Division."

Role-play a bus driver on his or her route. Include such common problems as a passenger who does not have enough money for the fare, a passenger who needs information, and a passenger whose conduct is disturbing others on the bus.

## Related Occupations

See how many of the following workers you can match with their job duties. Like the local transit busdriver, they are all involved in carrying people or goods over our highways and city streets.

| | |
|---|---|
| 1. Local truckdriver | a. Transports sick or injured people to the hospital. |
| 2. Route driver | b. Drives a group of passengers from one town to another. |
| 3. Ambulance driver | c. Drives children to school in the morning and back home in the afternoon. |
| 4. Long-distance truckdriver | d. Moves goods from terminals and warehouses to factories, stores, and homes in the area. |
| 5. Chauffeur | e. Paid and licensed driver of a private motor car. |
| 6. Long-distance busdriver | f. Delivers goods from the place of business to the customers. May collect payments or try to sell the company's services. |
| 7. Taxicab driver | g. Picks up passengers at any location (often getting the information over a two-way radio) and drives them directly to their destination. |
| 8. School busdriver | h. Travels along turnpikes and highways carrying goods between terminals that are thousands of miles apart. |

*See answers at end of chapter.*

## Job Facts

There isn't room in this book for a story about every transportation occupation. However, you'll find some important facts about 21 of these occupations in the following section. If you want additional information about any of them, you might begin by consulting the *Occupational Outlook Handbook*, a publication of the Department of Labor which should be available in your school or public library.

| *Occupation* | *Nature and Places of Work* | *Training and Qualifications* | *Other Information* |
|---|---|---|---|
| **AIR TRANSPORTATION** | | | |
| **Air Traffic Controllers** | Controllers keep track of planes on the ground and in the air, and give pilots instructions to keep planes on course and prevent accidents or delays.<br><br>All civilian air traffic controllers work for the Federal Government as employees of the Federal Aviation Administration (FAA). They work in the control towers at airports and at control centers along air routes throughout the country. | Controllers must be in excellent health and pass a yearly physical exam. They should be articulate, since directions to pilots must be given quickly and clearly, and have a decisive personality.<br><br>Applicants must have 3 years of work experience or 4 years of college, or both. Civilian or military experience as a controller, pilot, or navigator is an asset.<br><br>Successful applicants receive both on-the-job and formal training. It usually takes 2 to 3 years to become a fully qualified controller. | Controllers work a basic 40-hour week. Because control towers and centers operate 24 hours a day, 7 days a week, controllers are assigned to night and weekend shifts on a rotating basis.<br><br>Controllers sometimes work under great stress. They must keep track of several planes at a time and make certain all pilots receive correct instructions. |

| *Occupation* | *Nature and Places of Work* | *Training and Qualifications* | *Other Information* |
|---|---|---|---|
| **Airplane Mechanics** | Mechanics keep planes in top operating condition. They inspect and maintain planes on a regular schedule and make repairs.<br><br>Over half of all mechanics are employed by the airlines, working near large cities at the airlines' main stops. Others work for the Federal Government, mainly at military bases, or for small repair shops at airports throughout the country. | Most mechanics learn their job in the Armed Forces or in trade schools certified by the FAA. Trade school courses last about 2 years.<br><br>Most of the mechanics who work on civilian aircraft are licensed by the FAA. Unlicensed mechanics are supervised by those with licenses.<br><br>Experience in automotive repair or other mechanical work is helpful, as are high school courses in mathematics, physics, chemistry, and mechanical drawing.<br><br>Mechanics must have strength and agility to lift heavy parts and do climbing and reaching. | Mechanics sometimes must stand or lie in awkward positions when making repairs. Work areas are noisy when engines are being tested.<br><br>Many mechanics are union members. |
| **Airplane Pilots** | Although most pilots fly planes that carry passengers and cargo, some do crop dusting, inspect power lines, or do aerial photography.<br><br>Most pilots work at major airports. About half work for the airlines, and the rest work for private businesses and the government. | All commercial pilots must be licensed by the FAA. To receive the license, they must pass a written and physical exam and demonstrate flying ability.<br><br>Flying is taught in military or civilian flying schools. Either kind of training satisfies requirements for licensing, but Armed Forces pilots have the opportunity to gain experience on jet aircraft that is preferred by airlines and many businesses.<br><br>College graduates are preferred for airline jobs. New airline pilots usually start as flight engineers. | Pilots must be able to make quick decisions and accurate judgments under pressure; the mental stress of being responsible for a safe flight can be tiring.<br><br>Pilots cannot fly more than 85 hours per month. Most flights involve layovers away from home. Work schedules often are irregular.<br><br>Most airline pilots are union members. |
| **Flight Attendants** | Flight attendants help make the passengers' flight safe, comfortable, and enjoyable.<br><br>Most flight attendants are stationed in major cities. Large numbers work out of Chicago, Dallas, Los Angeles, Miami, New York, and San Francisco. | Poise, tact, resourcefulness, and a pleasant manner with strangers all are important traits.<br>Applicants must be high school graduates. Those with some college, nurses' training, or experience dealing with the public are preferred.<br><br>Most large airlines give newly hired flight attendants about 5 weeks of training in their own schools. | Attendants usually fly 80 hours per month or less but may devote up to 35 more hours on the ground to prepare for flights. They may have to work nights, weekends, or holidays.<br><br>Most are union members. |

| *Occupation* | *Nature and Places of Work* | *Training and Qualifications* | *Other Information* |
|---|---|---|---|
| Reservation, Ticket, and Passenger Agents | These workers reserve seats, sell tickets, and help passengers board planes.<br><br>Most agents work in downtown offices or at large metropolitan airports. | Because agents deal directly with the public, airlines seek pleasant, personable, attractive applicants. A good speaking voice is essential.<br><br>A high school diploma is required and some college is preferred.<br><br>New employees usually receive about a week of classroom instruction to learn how to use the flight schedule book and the computer. Once they are on the job, at least 3 weeks of close supervision by an experienced worker are needed before they can handle the job alone. | Work schedules may be irregular. During holidays and other busy periods, agents may find the work hectic.<br><br>Many agents belong to unions. |
| **RAILROAD OCCUPATIONS** | | | |
| Brake Operators | Brake operators couple and uncouple cars and operate track switches in railroad yards. They also look for faulty equipment and make minor repairs. | Brake operators need to be in good physical condition and have mechanical aptitude to operate switches and handbrakes and to board moving trains. Employers prefer high school graduates.<br><br>Skills are learned on the job and it takes about a year to learn them thoroughly. It usually takes several years, however, before brake operators have enough seniority to get regular assignments. | Brake operators may have to work nights, weekends, and holidays. Those who don't have regular assignments may be called to work on short notice. The job often calls for time away from home.<br><br>Most brake operators are union members. |
| Conductors | Conductors are in charge of train and yard crews. They must make sure passengers and cargo are delivered safely and on time. | Qualified brake operators are promoted to conductors on a seniority basis. They must pass exams covering signals, timetables, operating rules, and related subjects.<br><br>Until permanent positions become available, new conductors substitute for experienced conductors who are absent. | Conductors may have to work nights, weekends, and holidays. The job often calls for time away from home. Since most freight trains are unscheduled, freight conductors may be called to work on short notice.<br><br>Many conductors are union members. |

| *Occupation* | *Nature and Places of Work* | *Training and Qualifications* | *Other Information* |
|---|---|---|---|
| **Locomotive Engineers** | Engineers operate the throttle to start and accelerate the train and use airbrakes to slow and stop it. They also watch gauges and meters that measure speed, fuel, battery charge, and air pressure in the brake lines. | Openings for locomotive engineers are filled by promoting engineers' helpers on a seniority basis. Helpers qualify for promotion by proving their ability to operate locomotives and by passing a written exam.<br><br>For engineer helper jobs, railroads prefer applicants who are high school graduates and at least 21 years old. They must have good hearing, eyesight, and color vision. Good eye-hand coordination, manual dexterity, and mechanical aptitude also are required.<br><br>Helpers receive on-the-job training that lasts about 6 weeks. | Locomotive engineers may have to work weekends and holidays. The job often calls for time away from home. Since most freight trains are unscheduled, freight engineers may be called to work on short notice.<br><br>Most engineers are union members. |
| **Shop Trades** | Every railroad employs its own workers to maintain and repair cars and other equipment. These skilled workers include car repairers, machinists, electrical workers, sheet-metal workers, boilermakers, and blacksmiths.<br><br>They work in railroad yards, terminals, and engine houses, as well as in locomotive repair shops. | Apprenticeship training is the most common way of entering the railroad shop trades, although some workers learn on the job and are upgraded from jobs as helpers and laborers.<br><br>Applicants who have had shop training in high school or vocational school are preferred. Automobile repair and machining courses are useful for machinists. Courses in electricity and physics will help those who want to be electrical workers. | Shop work is active and strenuous. It involves stooping, lifting, and climbing. Some workers may face noisy shop conditions. Other workers, such as car repairers, must work outdoors in all kinds of weather.<br><br>Most shop workers are union members. |
| **Signal Department Workers** | Railroad signal workers install, repair, and maintain the train control, communication, and signaling systems that direct trains and assure safety. These include gate crossings, signal lights, and switches. | Applicants who are high school or vocational school graduates are preferred. Courses in blueprint reading, electricity, and electronics provide a helpful background. Applicants also should be able to do heavy work.<br><br>New workers are assigned as helpers to experienced workers. After 60 to 90 days of training, they may advance to assistants. After another 2 to 4 years, qualified assistants may be promoted to signal installers or maintainers. | Since they work over large sections of track, installers usually live away from home during the workweek, frequently in camp cars provided by the company. Maintainers usually live at home and service signals over a limited stretch of track. However, they must make repairs regardless of weather conditions or time of day.<br><br>Most signal installers and maintainers are union members. |

# Transportation Occupations

| *Occupation* | *Nature and Places of Work* | *Training and Qualifications* | *Other Information* |
|---|---|---|---|
| **Station Agents** | Station agents are the customers' contact with the railroad. They take customer orders, arrange a delivery schedule, inspect merchandise, and prepare customers' bills. At passenger stations, agents supervise and coordinate selling tickets and checking baggage.<br><br>Most agents work in railroad freight stations. Some work in passenger stations. | Station agents usually rise through the ranks of other railroad occupations, such as telephoners, telegraphers, tower operators, and clerks. | At major freight and passenger stations, the agents' duties are mainly administrative and supervisory.<br><br>Most station agents are union members. |
| **Telegraphers, Telephoners, and Tower Operators** | Following instructions given by dispatchers and yardmasters, tower operators route train traffic by working controls that activate signals and switches on the tracks. Telegraphers and telephoners receive orders about the train's movement, such as its speed or its route, and pass them on to the train crews.<br><br>Tower operators work in towers located in railroad yards or at major junctions near cities. Telegraphers and telephoners work in yards and at railroad stations. | Telegraphers, telephoners, and tower operators should be responsible and alert, as they have to make quick decisions. Good hearing and eyesight, including normal color vision, are required.<br><br>Jobs usually are filled from the ranks of clerical workers by seniority. Newcomers receive on-the-job training that covers operating rules, train orders, and station operations. Trainees must pass exams and demonstrate abilities before they qualify.<br><br>Until permanent positions become available, newly qualified workers substitute for experienced workers who are absent. | Most telegraphers, telephoners, and tower operators are union members. |
| **Track Workers** | Railroads employ these workers to service, repair, and replace sections of track. | Railroads prefer applicants who can read, write, and do heavy work. The job is active and strenuous. A physical examination may be necessary.<br><br>Most new track workers learn their skills through training on the job, which lasts about 2 years. | Track workers on traveling crews may have to commute long distances to work. Many live in camp cars or trailers provided by the railroads.<br><br>Most track workers are union members. |

| *Occupation* | *Nature and Places of Work* | *Training and Qualifications* | *Other Information* |
|---|---|---|---|
| **MERCHANT MARINE OCCUPATIONS** | | | |
| **Merchant Marine Officers** | In command of every oceangoing vessel is the captain, who has complete authority and responsibility for the ship. A typical crew on a ship is divided into the deck department, the engine department, and the steward's department.<br><br>Deck officers direct the movement of the ship and the maintenance of the deck and hull. Engine officers are responsible for starting, stopping, and controlling the speed of the main engines, as well as maintaining the machinery and equipment aboard ship. Steward officers supervise the cooking and serving of meals, and the upkeep of living quarters.<br><br>Officers work aboard dry-cargo ships, tankers, barges, ferries, freighters, passenger liners, and excursion steamers. | No educational requirements have been set for merchant marine officers. However, because of the complex machinery and navigational and electronic equipment on modern ships, formal training usually is needed to pass Coast Guard examinations.<br><br>Candidates must meet certain legal (age, citizenship) and medical requirements. For example, they must be at least 21 years old, U.S. citizens, and have a health certificate proving good physical condition. They also must have at least 3 years of appropriate sea experience or be a graduate of an approved training program.<br><br>Formal training for merchant marine officers is available at the U.S. Merchant Marine Academy in Kings Point, N.Y., and in six State merchant marine academies. These 4-year programs in nautical science or marine engineering provide classroom instruction as well as practical experience at sea. | Officers must be able to live and work in close quarters as part of a team. They are away from home for long periods of time.<br><br>Generally, officers at sea work 7 days a week with two 4-hour shifts every 24 hours and 8 hours off in between. Overtime pay is received for over 40 hours work per week. Vacations range from 90 to 180 days a year.<br><br>Almost 90 percent of all officers belong to maritime unions. |
| **Merchant Marine Sailors** | Sailors may be assigned to either the deck department, the engine department, or the steward's department. Under orders from their officers, they do most of the manual labor in these departments.<br><br>Sailors work aboard dry-cargo ships, tankers, barges, ferries, freighters, passenger liners, and excursion steamers. | Although not required, sea experience in the Navy or Coast Guard provides a good background for merchant marine jobs. Applicants must get a health certificate from a doctor and then must obtain a letter from a shipping company stating that they will be hired when a job becomes available. In addition, applicants must register with the U.S. Coast Guard and acquire identification papers.<br><br>All these requirements do not guarantee a job; they merely qualify you. To get a job, you must be present at a hiring hall when an opening becomes available. Hiring halls are located in the chief ports around the country. | Sailors must be able to live and work in close quarters as part of a team. They are away from home for long periods of time.<br><br>Generally, sailors are required to work 7 days a week, with two 4-hour shifts every 24 hours and 8 hours off in between. Overtime pay is received for over 40 hours per week. Vacations range from 90 to 180 days a year.<br><br>Most sailors belong to unions. |

| *Occupation* | *Nature and Places of Work* | *Training and Qualifications* | *Other Information* |
|---|---|---|---|
| **DRIVING OCCUPATIONS** | | | |
| **Intercity Busdrivers** | These workers drive passengers between communities and cities. They also inspect buses before leaving, collect fares or tickets from passengers, and load and unload baggage. Most work out of large cities. | Since they represent their companies in dealing with passengers, bus drivers must be courteous and tactful. They should have steady nerves and a relaxed personality, as heavy traffic can be a strain.<br><br>The U.S. Department of Transportation requires that intercity drivers be at least 21 years old and be able to read, write, and speak English. They also must have good hearing and vision and normal use of arms and legs. Applicants must pass a driving test and a written exam that tests their knowledge of State traffic regulations. Most States require drivers to have a chauffeur's license.<br><br>Many private bus companies prefer applicants to be at least 25 years old; some require bus or truck driving experience. Most companies conduct 2- to 8-week training programs for new drivers that include both classroom and driving instruction.<br><br>Until permanent positions become available, new drivers substitute for experienced drivers who are absent. | Since intercity buses run at all hours, drivers may have to work nights or weekends. The job may require time away from home.<br><br>Most of these drivers are union members. |

| *Occupation* | *Nature and Places of Work* | *Training and Qualifications* | *Other Information* |
|---|---|---|---|
| **Long-Distance Truckdrivers** | These workers travel along turnpikes and highways carrying goods between cities that are hundreds or even thousands of miles apart. | The U.S. Department of Transportation requires that long-distance drivers be at least 21 years old and in good physical condition, including good hearing and vision, normal use of arms and legs, and normal blood pressure. Applicants must pass written and driving examinations. Most States require truckdrivers to have a chauffeur's license.<br><br>Some companies require truckdrivers to be at least 25 years old and have several years of truck-driving experience.<br><br>New drivers are usually trained on the job under the supervision of an instructor or an experienced driver. | A workweek of more than 40 hours is very common. This may include nights or weekends, and often time away from home.<br><br>The noise and vibration of the truck, and being on the road for long periods of time, may be physically straining and tiring.<br><br>Most long-distance drivers are union members. |
| **Parking Attendants** | Parking attendants park customers' cars and collect payment. They work in public and private parking lots throughout the country. | Attendants must have a valid driver's license, be able to drive all types of cars, and have good eyesight and peripheral vision. They also must be able to keep records of claim tickets, compute parking charges, and make change.<br><br>Parking attendants should be neat, tactful, and courteous when they are dealing with the public. Good physical condition is helpful, because attendants may have to stand for long periods of time or move cars in a hurry. Although there are no specific educational requirements for parking attendants, many employers prefer high school graduates.<br><br>Most attendants are trained on the job, under the supervision of a more experienced worker. | Attendants often work long hours and on nights and weekends. In addition, many attendants spend much time outdoors in all kinds of weather.<br><br>A number of parking attendants are union members. |

# Transportation Occupations

| *Occupation* | *Nature and Places of Work* | *Training and Qualifications* | *Other Information* |
|---|---|---|---|
| **Local Transit Busdrivers** | These workers drive passengers over city and suburban streets following specific routes and timetables. They also inspect buses before leaving, collect fares or tickets, and answer passengers' questions.<br><br>They work in cities and towns throughout the country. | Busdrivers must be courteous and tactful in dealing with passengers. They should have steady nerves and a relaxed personality, as heavy traffic can be a strain.<br><br>New drivers should be at least 21 years old, be in good health, and have good eyesight. They must pass physical and written exams. Most States require a chauffeur's license. High school graduates may be preferred.<br><br>Most companies conduct on-the-job training for new drivers that includes classroom and driving instruction.<br><br>Until permanent positions become available, new drivers substitute for experienced drivers who are absent. | The workweek for regular drivers usually consists of any 5 workdays during the week; Saturday and Sunday are counted as regular workdays. Some drivers work a split shift in which they work in the morning, have the afternoon free, and go back to work in the evenings.<br><br>Most of these drivers are union members. |
| **Local Truckdrivers** | These workers drive around town, moving goods from warehouses and terminals to factories, stores, and homes. They often load and unload goods. | Qualifications for drivers vary, depending on the type of truck and nature of the business. Most States require a chauffeur's license. Applicants should be in good health, including good vision and hearing. Experience in loading and unloading freight or as a truckdriver's helper is useful. Since drivers often deal directly with the company's customers, the ability to get along well with people is important.<br><br>Training given to new drivers is usually informal and may be only a few hours of instruction from an experienced driver. | Local truckdrivers frequently work over 40 hours per week. Night or early morning work is sometimes necessary.<br><br>Many truckdrivers are union members. |

# Exploring Careers

| *Occupation* | *Nature and Places of Work* | *Training and Qualifications* | *Other Information* |
|---|---|---|---|
| Taxicab Drivers | Taxicab drivers pick up passengers at any location and drive them to their destination. Although taxicab drivers are employed in all but the smallest cities, employment is concentrated in large metropolitan areas. | Taxi drivers usually must have a State chauffeur's license and a taxicab operator's license issued by the local police or Public Utilities Commission. In most communities, applicants must pass a written exam on taxicab and traffic regulations.<br><br>Many companies hire only applicants who are over 21 years old. Although there are no minimum educational requirements, many companies prefer applicants who have at least an eighth grade education. Applicants generally must be in good health and have a good driving record.<br><br>Tact and courtesy are important in dealing with the public. A relaxed personality is also important. | Drivers may have to work nights or weekends. Many cab driving jobs are available for college students and others who want part-time work.<br><br>Many cab drivers in large cities belong to unions. |

## Answers to Related Occupations

### AIR TRAFFIC CONTROLLER

1. Airplane mechanic, 2. Airplane maintenance crew, 3. Baggage handler, 4. Co-pilot, 5. Dispatcher, 6. Electronics technician, 7. En route traffic controller, 8. Flight attendant, 9. Flight engineer, 10. Passenger agent, 11. Pilot, 12. Reservation agent, 13. Ticket agent.

### RAILROAD PASSENGER CONDUCTOR

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### BUS DRIVER

1. d, 2. f, 3. a, 4. h, 5. e, 6. b, 7. g, 8. c.

# Occupational Outlook Handbook

One of the most widely used resources in the field of vocational guidance, the Handbook is an "encyclopedia of careers" covering several hundred occupations. A new edition is published every 2 years. The reader will find information on

- What the work is like
- Job prospects
- Personal qualifications
- Education and training requirements
- Earnings
- Related occupations
- Where to find additional information.

Contact any of the BLS Regional Offices listed inside the back cover for price and ordering information.

# Occupational Outlook Quarterly

A periodical to help students, job seekers, counselors, and education planners keep up with occupational and employment developments. The Quarterly is written in nontechnical language and illustrated in color. Articles cover such topics as these:

- Job prospects for college graduates
- How to look for a job
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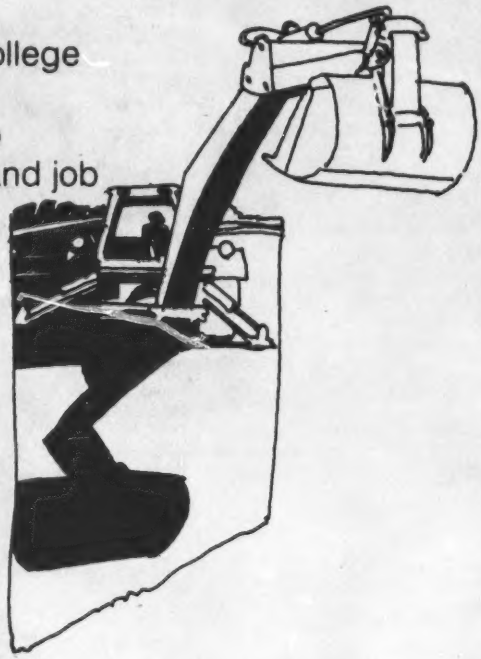

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Subscription price per year (4 issues) is $6 domestic, $7.50 foreign, single copy $1.75. Prices are subject to change.

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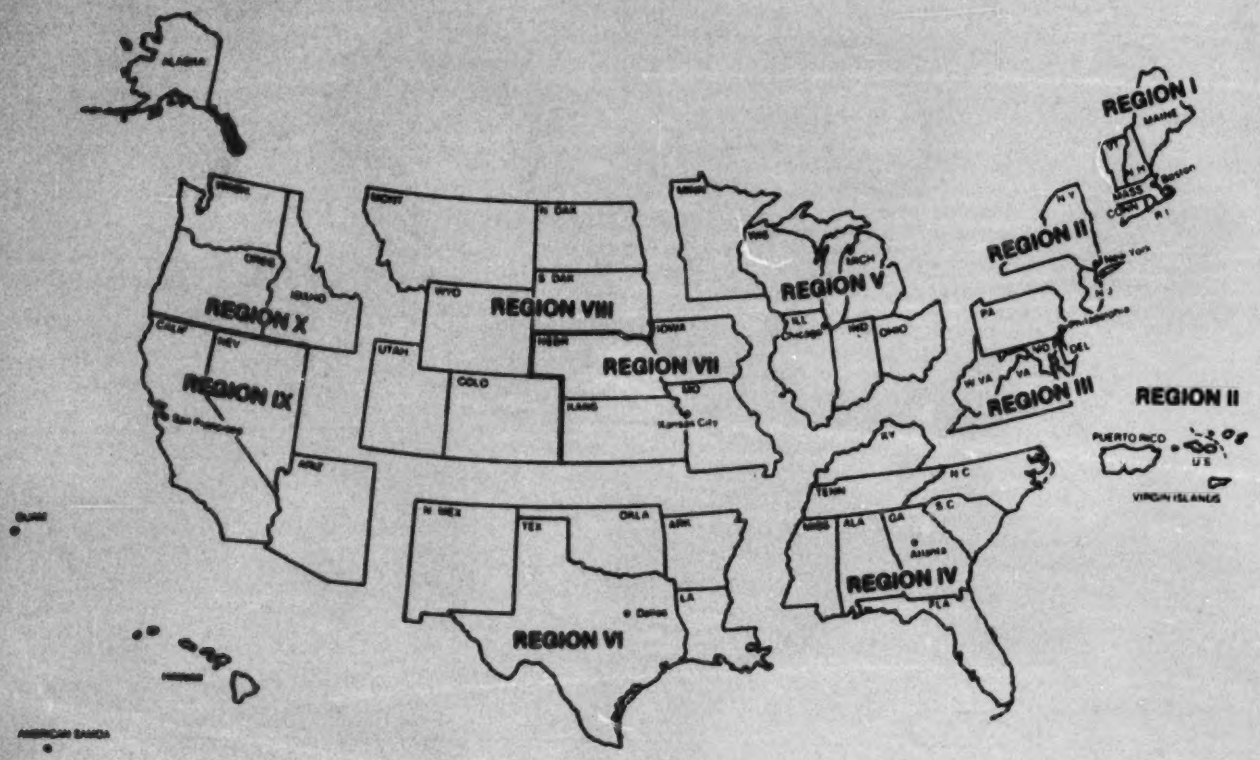


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